Alberta Forestry Research Institute

Sustainable Growth in Alberta's Forest Sector: A Life Sciences Approach

Alberta Forestry Research Institute Business Plan: 2004 - 2007

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Preamble

This document is the 2004- 2007 business plan of the Alberta Forestry Research Institute (AFRI).

The AFRI Secretariat, with support from Dick Unsworth of Deep Blue Associates, was instructed by the AFRI Board at their June 17th Board meeting, to draft the new business plan for 2004/07 for consideration by the AFRI Board. This document is that business plan.

While Deep Blue took a lead role in pulling together the necessary components, and packaging the content, AFRI has provided virtually all of the content through a combination of:

- The strategic direction of the AFRI Board;
- Existing AFRI strategic and planning documents;
- Relevant industry publications;
- The major consultation events, held earlier in the year;
- The personal knowledge of Malcolm Wilson, AFRI's Acting Managing Director and Ted Szabo, Director, Forest Products.

AFRI's Board of Directors

- **Doug Currie** is President of Palliser Lumber Sales Ltd., a company located in Crossfield, Alberta, involved in lumber remanufacturing.

- **Norm Denney** is currently the leader of forestlands for all Weyerhaeuser operations in Alberta.

- **Conway Dermott** is an Alberta Registered Professional Forester with over 38 years of forest management experience, and currently working as an environmental and forestry consultant.

- **Ron Dyck** is Executive Director of Research for Alberta Innovation and Science.

- **Bob Fessenden** is Deputy Minister of Sustainable Resource Development.

- **Dennis Hawksworth** is Vice-President, Weldwood of Canada Ltd.

- **William Hunter, Co-chair,** is President and Chief Operating Officer for Alberta-Pacific Forest Industries Inc. and serves on the Board of Directors.

- **John Spence** is Chair and Professor in the Department of Renewable Resources at the University of Alberta.

- **Ivan Strang, Co-chair,** is the Member of the Legislative Assembly for West Yellowhead.

Executive Summary

The Alberta Forestry Research Institute (AFRI) was created by the Minister of Innovation and Science in 2000 as part of the family of research institutes formed by the Alberta Science and Research Authority (ASRA). AFRI's mandate is to prioritize, coordinate, support and promote research, new products and technology development and transfer in the forest sector in Alberta.

Today, Alberta's forest products sector generates $4.8 billion in annual sales, employs 25,000 people directly, supports employment for another 27,500 Albertans, and is the primary employer in over 50 communities.

AFRI will catalyze sustainable growth in Alberta's forest sector through Alberta's Life Sciences Strategy. By the year 2020, AFRI expects the forest sector to have doubled its value of shipments, created direct employment for an additional 17,000 Albertans, and that our forests will provide enhanced environmental, recreational and spiritual value for all Albertans.

To facilitate growth in the sector, AFRI established three strategic directions, closely linked to the life sciences strategy, that were validated through three major stakeholder consultation events. The three strategic research directions are:

i. **Sustainable Forest Management**: *responsibly stewarding our resources and facilitating access to existing markets.*
ii. **Enhancing and Diversifying the Value Chain:** *optimizing our current manufacturing technologies and supply chains.*
iii. **New Products and Processes**: *innovative applications of all natural resources, fibres, fins, furs, foods and forages, to add to environmental, economic, cultural, and social values.*

The consultation events also provided input that has enabled AFRI to select an additional five program areas. The eight program areas, representing AFRI's research priorities, are:

Existing Programs
1. Sustainable Forest Management Network and Foothills Model Forest
2. On-going investments in Forintek Canada Corporation and FERIC
3. Manning Diversified Forest Products Research Trust Fund

New Programs
4. Conservation of Biodiversity
5. Yield and Productivity Enhancement
6. Composite Natural Fibre Products Development Program
7. Biofactory / Waste Management
8. Design and Process

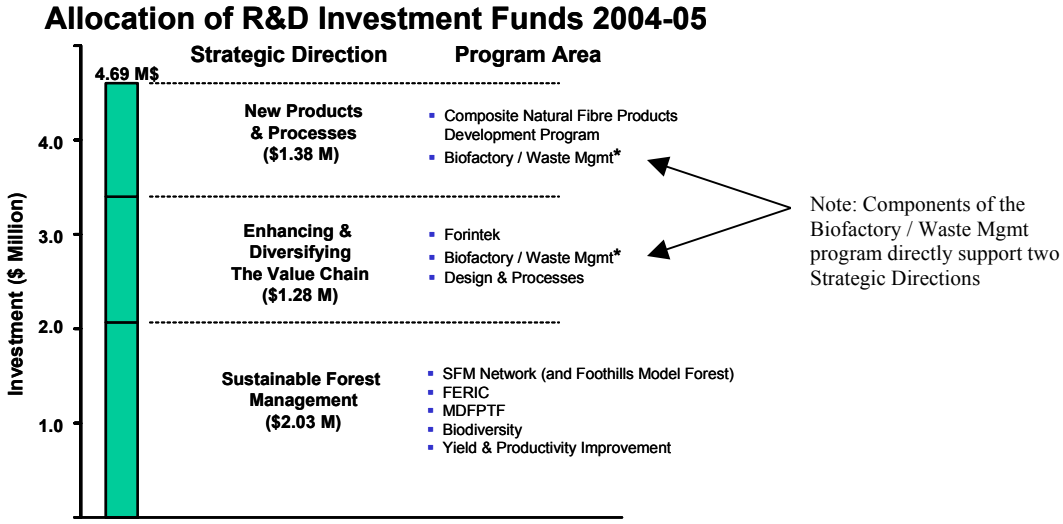
Expected outcomes from successful pursuit of these R&D programs are:

- A $1.2 billion increase in the value of shipments by 2010, from increased supply of fibre, more value-added products from fibre, improved operating efficiency, and new bio-energy opportunities,
- Stronger supply and service sectors,
- Improved air and water quality, and carbon sequestration,
- Job creation, enhanced aboriginal and rural community stability,
- Enhanced environmental, recreational, tourism and spiritual value, and
- Increased tax revenues for the Provincial and local governments, commensurate with the increase in value of shipments.

To support the strategic directions, AFRI has established the following budget.

Budget Item	2004-05	2005-06	2006-07
Research Investment			
Sustainable Forest Management	$2,030,000	$3,300,000	$4,600,000
Enhancing and Diversifying the Value Chain	$1,280,000	$2,100,000	$2,700,000
New Products and Processes	$1,380,000	$2,800,000	$3,600,000
Total Research Investment	**$4,690,000**	**$8,200,000**	**$10,900,000**
Administrative Expenses			
Salaries	$240,000	$240,000	$240,000
Office/ Administrative Supplies	$10,000	$30,000	$30,000
Consultation Expenses	$30,000	$50,000	$50,000
Travel Expenses	$30,000	$30,000	$20,000
Total Administrative Expenses	**$310,000**	**$350,000**	**$350,000**
Total Program Expenses	**$5,000,000**	**$8,550,000**	**$11,250,000**

An implementation plan is being developed detailing specific activities for pursuing the research program areas. The illustration below summarizes the programs areas AFRI will be pursuing over the 2004-05 fiscal year.



Key risks of pursuing the R&D investment plan are that the research generated is not applied by users and that there is insufficient research investment leveraged from industry. To mitigate these risks:

- AFRI has developed a balanced research portfolio, aligned with ASRA's strategic priorities and adhering to clearly defined program selection parameters;
- Active technology transfer components will be part of each program;
- AFRI's Board, which includes industry representatives, will participate in ongoing consultation and communication activities to promote the benefits of AFRI's programs.

AFRI's plan identifies strategic opportunities for investment in research and development that will catalyze sustainable growth for the forest industry in Alberta. Through successful implementation of AFRI's strategic R&D investment plan, the forest industry, the provincial and local governments and, ultimately, the people of Alberta stand to garner increased economic, environmental and social value from our forestlands.

Table of Contents

1. The Alberta Forestry Research Institute (AFRI)…….. 1
1.1 History ……..... 1
1.2 Mission, Mandate, Vision and Values …… 1
1.3 AFRI's Customers …….. 2
1.4 AFRI's Progress to Date ……. 2

2. The Forest Products Industry Environment …… 2
2.1 Alberta's Forest Sector ……. 2
2.2 Key Issues Impacting Alberta's Forest Sector ……. 4

3. Research Strategies …… 4
3.1 AFRI's Strategic Objectives and Strategic Directions …….. 4
3.2 Program Areas of Interest…….. 5
3.3 Alignment with ASRA Strategies and Innovation and Science Business Plan 6
3.4 AFRI Funding Strategy …… 6

4. Anticipated Benefits …… 7
4.1 Benefits to Industry Participants ……... 8
4.2 Benefits to the Provincial and Local Governments of Alberta ……. 8
4.3 Benefits to the People of Alberta …….. 8

5. Performance Measurement …… 9
5.1 Performance Measures and Targets ……..……. 9

6. Management and Organization …… 10
6.1 Structure …….. ……. 10
6.2 The AFRI Board …… 10
6.3 The AFRI Managing Director …… 10

7. R&D Investment Plan …….……..……..……. 11
7.1 Strategic Program Areas…… …….. 11
7.2 AFRI's R&D Investment Requirement…… 11
7.3 Strategic R&D Plan: 2004-05 ……..…… 12
7.4 Operating Budget …… 12
7.5 Total Program Budget …… 13

8. Key Risks …….. 13

List of Appendices

Appendix 1: AFRI's Alignment with ASRA's Life Sciences Strategy

Appendix 2: AFRI Research Project Selection Parameters

Appendix 3: Anticipated Benefits from Investment in Forestry R&D

Appendix 4: Estimate of Additional Tax Revenue From Growth in Forest Sector

Appendix 5: Preliminary Funding Allocation to Program Areas 2004-07

1. The Alberta Forestry Research Institute (AFRI)

1.1. History

Established by the Minister of Innovation and Science in 2000, AFRI is the newest research institute created under the Alberta Science and Research Authority Act (2000).[1] It will encourage and support private and public investment in the economic, environmental, ecological and community sustainability of Alberta's forestry sector. As this industry evolves to meet the needs and challenges of the 21st century, AFRI will provide valuable strategic research direction and set research priorities that will ensure a vibrant forestry industry within the context of a sustainable environment.

1.2. Mission, Mandate, Vision and Values

It is AFRI's ***mission*** to enhance the contribution of science and research to the economic, environmental, and community sustainability of Alberta and to promote the global competitiveness of its forest sector.

AFRI's ***mandate*** is to prioritize, coordinate, support and promote research, new products and technology development and transfer in the forest sector in Alberta, and to build upon the work that the Alberta Forestry Research Council has completed. Specifically, as identified through the ASRA Act, AFRI:

- May compile, assess and disseminate information on science, engineering and technology related to forestry;
- Must, at the request of the Authority (ASRA) or the Minister, advise the Authority or the Minister on questions of science, engineering and technology related to forestry;
- Must provide recommendations on applications for grants related to forestry assigned to it by the Authority or the Minister.[2]

AFRI's ***vision*** is to be recognized as an international leader in life science-based research that achieves strategic objectives in sustainable forest management, new products and processes, and value chain enhancement and diversification.

AFRI is an outcome-based, accountable, and cost-effective organization. AFRI ***values***:

- Sustainable Forests
- Partnerships, Cooperation, and Collaboration
- Strategic Thinking
- Adaptability
- Practicality
- Optimism
- Innovation
- Consultation
- Excellence in Science
- Public Trust
- Consistency
- Integrity

[1] Alberta Science and Research Authority Act RSA 2000, Chapter A-33.
[2] ibid

1.3. AFRI's Customers

In executing its mandate, AFRI serves three sets of customers. They are:

- The provincial and local governments;
- Alberta's forest products industry;
- The people of Alberta, their communities and institutions.

1.4. AFRI's Progress to Date

Since its creation, AFRI has focused on two areas. First, it has been concerned with becoming operational. In the process of doing so, key activities have included developing a strategic plan, conducting a series of consultation events for vetting that strategic plan, developing an R&D investment plan, and finalizing its business plan.

The second focus has been on supporting three R&D initiatives, as described below.

AFRI has inherited two significant long-term investments in sustainable forest management; both the Sustainable Forest Management Network (SFMN) and the Manning Diversified Forest Products Research Trust Fund (MDRTF) are managed by AFRI. These block grants are allocated annually and are managed by organizations and processes largely beyond AFRI's control. The only function of the AFRI Board is to provide the Minister of Innovation and Science and ASRA with advice, derived by auditing, regarding the effectiveness of these grants and any measures required to improve it. A program performance audit has been completed for MDRTF and one is underway for SFMN.

The third initiative is the ongoing investments in Forintek Canada Corporation, the Forest Engineering Research Institute of Canada (FERIC), and the Foothills Model Forest. During the 2002/03 fiscal year the AFRI Board assumed responsibility for the Alberta Government's annual membership fee, currently $100,000, in Forintek. Sustainable Resource Development made the commitment to transfer similar fees paid to FERIC ($52,000) and to the Foothills Model Forest ($350,000) to Innovation and Science to be included as annual strategic infrastructure investments administered through AFRI.

2. The Forest Products Industry Environment

2.1. Alberta's Forest Sector

Alberta's forest industry has been a major source of economic growth in the province over the past twenty years. The forest industry has moved from being primarily a manufacturer of commodity lumber to a diversified sector which makes and exports lumber, pulp, oriented strand board, medium density fibre board, remanufactured products, engineered building products, prefabricated buildings, cabinets, and furniture, to name just a few products.

In 1984, manufacturing shipments from the wood products plus paper and allied products were less than $1.0 billion. In 1999, manufacturing shipments reached $4.1 billion; 72% of

these shipments were exported.[3] Today, annual shipments are worth approximately $4.8 billion, and the forest products industry is Alberta's third largest manufacturing sector.[4]

The forest industry employs more than 25,000 people directly and supports employment for an additional 27,700 people. Fifty-two of Alberta's communities depend on forestry as a primary employer.[5] The secondary forest products sector comprises more than 600 small and medium-sized companies, operating in a number of diverse markets.[6]

Alberta's forests cover approximately 59% of the province's land area and include about 2.2 billion cubic meters of growing stock.[7] Approximately 9% of Alberta's forests are controlled by the federal government in the form of parks and other protected areas. Alberta owns approximately 87% of the province's forests and allows, on average, for 23.3 million cubic meters to be harvested each year.[8]

As shown in Figure 1 below, relative to other provinces, Alberta's value of shipments per cubic meter of fibre and direct employment created per unit of fibre are low. It is AFRI's expectation to reposition Alberta by the year 2020, as shown in the figure.

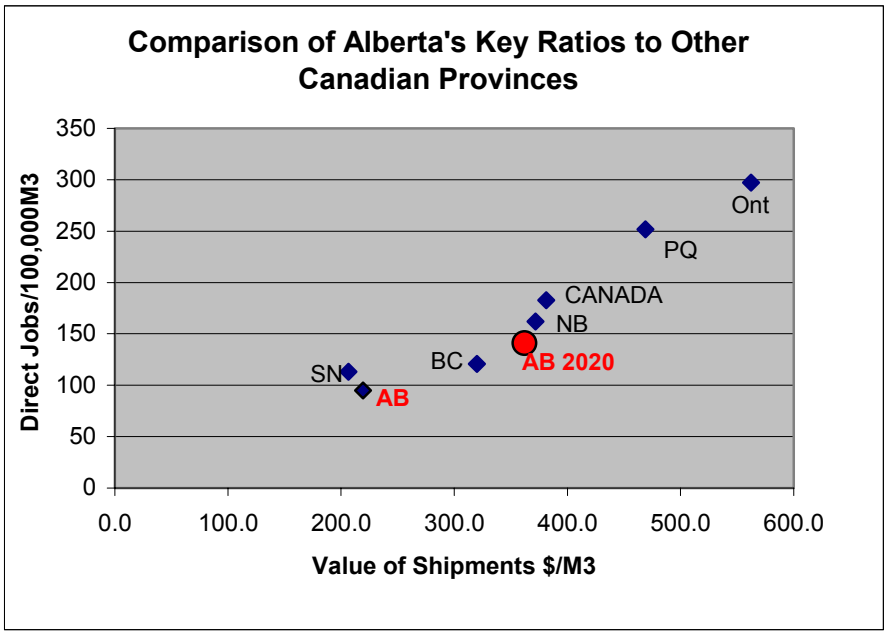


Figure 1. Alberta in Relation to Other Canadian Provinces[9]

Between 1982 and 1997, Canada's spending in forest sector R&D was 0.4% of shipments, compared to 1.5% for the US and 1.75% for Sweden. In Canada, federal funding for forestry

[3] Alberta Forest Products Association. 2001. *Alberta's Forest Products Industries: Overview and Economic Impact*. http://www3.gov.ab.ca/srd/forests/managing/business/pubs/AlbertaForestProductsIndustries.pdf
[4] Natural Resources Canada. 2002. *The State of Canada's Forests* 2001-02. http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/.
[5] Government of Alberta. 1996. *The Status of Alberta's Timber Supply*. http://www3.gov.ab.ca/srd/forests/fmd/timber/TimberSupply.html
[6] *Alberta's Forest Products Industries: Overview and Economic Impact*.
[7] *The Status of Alberta's Timber Supply*.
[8] *The State of Canada's Forests* 2001-02.
[9] Data source: Natural Resources Canada. 2002. *The State of Canada's Forests* 2001-02. http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/.

research and development has decreased from $116 million in 1995 to $78 million in 2000.[10] Of Canada's four forestry provinces (Ontario, Quebec, British Columbia and Alberta), Alberta's investment to R&D was the lowest over that time frame.

At present, there are approximately ten forest sector research and technology organizations in Alberta, conducting research programs with an estimated annual value of $20 million in total. Currently, the provincial and local governments' investment is approximately $4 million annually.[11]

Although Alberta's forest sector has grown rapidly over the past twenty years, the majority of Canada's forest products companies' key decision makers, and their corporate R&D activities, are located in Montreal, Toronto and Vancouver. The national organizations representing the industry, the Forest Products Association of Canada and the newly formed Canadian Forestry Innovation Council, are headquartered in Ottawa. These companies and organizations support national R&D priorities, often through the national research institutes, FERIC, Forintek and Paprican and through Canada's major forestry universities. While the Alberta forest sector may benefit from these national programs Alberta needs the opportunity to make significant R&D investments in order to influence their direction to serve our priorities.

2.2. Key Issues Impacting Alberta's Forest Sector

There are a number of issues impacting Alberta's Forest Sector today. The key issues are as follows:

- The softwood lumber countervail duties and non-tariff trade barriers, such as certification of our forests as "sustainably managed";
- Lack of global forestry and forest products decision-makers located in Alberta;
- The chronic under funding of forestry and forest products R&D in Alberta;
- Federal funding for forestry research and development has decreased from $116 million in 1995 to $78 million in 2000;
- The need for provisions to encourage greater utilization of biomass for bio-energy and bio-products;
- The limitations imposed by the existing land tenure and disposition system in Alberta;
- The need for an integrated approach to land management;
- The limited access to a fibre base for emerging industries;
- Upholding and respecting Aboriginal rights;
- Maintaining global competitiveness for Alberta's forest products in the marketplace.

3. Research Strategies

3.1. AFRI's Strategic Objectives and Strategic Directions

Alberta's forest sector envisions growth from its current level of $4.8 billion in shipments annually to $9.6 billion by 2020. This growth will be achieved by adding more value to the

[10] Binkley, C.S. and O.L. Forgacs. 1998. *Status of forest sector research and development in Canada*. Pulp & Paper Canada, January 1998: 39-42.
[11] Natural Resources Canada. 2002. *The State of Canada's Forests* 2001-02. http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/.

fibre already available, by managing forests to produce more fibre per unit area, and by using timber from woodlots and agrifibres not included in the current fibre supply.

To facilitate this growth, AFRI has established three broad objectives for research and development. AFRI's program investments will generate research results that will:

- Ensure that Alberta's forest resources can be managed sustainably, and that the environmental, economic and social opportunities and values associated with our forests that are enjoyed by Albertans today remain part of our legacy for tomorrow;
- Ensure that our forest industry remains globally competitive and can maximize the benefits Albertans receive from the existing infrastructure, products and services;
- Bring new fibre and non-wood fibre products from conception to the marketplace.

These objectives translate into AFRI's three strategic directions. They are:

i. **Sustainable Forest Management**: responsibly stewarding our resources and facilitating access to existing markets.
ii. **Enhancing and Diversifying the Value Chain:** optimizing our current manufacturing technologies and supply chains.
iii. **New Products and Processes**: innovative applications of all natural resources, including fibres, fins, furs, foods and forages, to add to environmental, economic, cultural, and social values.

3.2. Program Areas of Interest

Between January and June of 2003, a series of consultation events[12] were conducted with individuals from a cross section of government, industry, technical institutions and research organizations, to provide additional input into the three strategic directions. Insight gained through this consultation process greatly assisted in the selection of five new program areas.

Table 1: Program Areas of Interest

	Program Area	Description
1	**Sustainable Forest Management Network** ***(Existing)***	At $1M annually, Alberta is the second-largest investor in this NSERC national university-based research network. SFMN projects study economic, social and environmental aspects of forestry, to ensure sustainability.
2	**Forintek Canada Corporation and FERIC** ***(Existing)***	These national institutes are funded through industry memberships and fee-for-service contract research and development. Both institutes actively support Alberta's forest sector and conduct R&D in Alberta.
3	**Manning Diversified Forest Products Research Trust Fund (MDRTF)** ***(Existing)***	This applied research program is funded through a commitment made by MDFP of $1 per cubic meter of timber harvested, or approximately $300K per annum. It supports a wide range of environmental studies, including: fish and wildlife inventories, silvicultural studies, forest products development, forest education, and career training.
4	**Conservation of Biodiversity** ***(New)***	Research into landscape-level biodiversity will drive practices that help companies in the forest sector to operate sustainably and obtain certification.
5	**Yield and Quality Enhancement** ***(New)***	This research program will strive to increase the quality and volume of fibre yielded per hectare in certain areas of Alberta's forests, thus increasing the value of fibre in the marketplace and creating a stable regional timber supply.

[12] Deep Blue Associates (2003). *Consultation Events for Defining Alberta Forest Sector Research Direction- Summary Document, July 2003*.

6	**Composite Natural Fibre Products Development Program** ***(New)***	Research focused on developing new products from new fibres has potential to invigorate the forest products industry in Alberta in the same way that the introduction of oriented strand board (OSB) did in the 1980s.
7	**Biofactory/ Waste Management** ***(New)***	This research program will focus on the development of bio-fuels, bio-chemicals, and new products and energy sources from bio-waste associated with forest products manufacturing.
8	**Design and Processes** ***(New)***	Research can strengthen the secondary manufacturing industry in Alberta. Increased competitiveness in secondary manufacturing will help to increase the value from forests that is captured by Alberta businesses and will create new employment.

3.3. Alignment with ASRA Strategies and Innovation and Science Business Plan

AFRI's three strategic directions and associated program areas have direct linkages to and synergies with ASRA's strategic priorities as depicted in Figure 2 below.

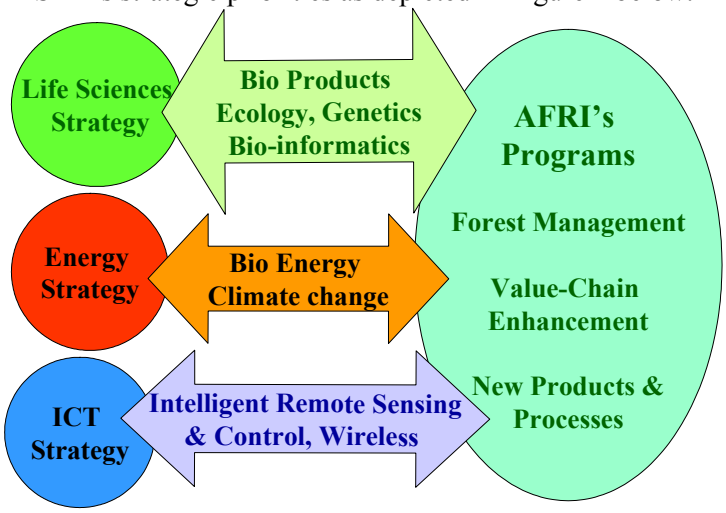


Figure 2. Alignment with ASRA Strategies and I&S Business Plan

A more detailed description of how AFRI's program areas link to ASRA's Life Sciences Strategy can be found in Appendix 1.

Further, AFRI's investments will be consistent with the Innovation and Science Business Plan, and will enhance and diversify Alberta's forest sector by:

- Investing in people;
- Investing in infrastructure;
- Investing in strategic projects;
- Promoting scientific understanding.

3.4. AFRI Funding Strategy

Research and innovation are, by their nature, risky enterprises. Responsible management of the research investment portfolio requires a diligent mixture of scientific rigor, sound project selection and management, and a commitment to the application of results. AFRI will provide a steady return to Albertans by supporting a balanced portfolio of research and innovation, linked to life sciences, that advances the forest sector in three strategic directions, ensuring its sustainability, its efficiency and providing new products and services in the marketplace.

Two funds have been established to manage AFRI's R&D Investments: the Enterprise Fund and the Innovation Fund.

The **Enterprise Fund** will support the Government of Alberta's existing investments in R&D organizations and collaborative ventures. These investments are:

- Sustainable Forest Management Network
- Manning Diversified Forest Products Research Trust Fund
- Forintek Canada Corporation
- FERIC
- Foothills Model Forest

The investments made through the Enterprise Fund, which may be added to or discontinued from time-to-time, will address AFRI priorities in the programs managed by existing organizations. The main purpose of these investments is to provide a connection between these enterprises and AFRI that will ensure consultation and collaboration and encourage technology transfer to Alberta. AFRI staff will be involved with those organizations in the selection and prioritization of the projects undertaken in the programs. An annual reporting of the progress of these investments will be provided.

The **Innovation Fund** will support investments in strategic programs and projects selected by the Board to accomplish AFRI's objectives. The majority of programs would generally be of significant duration, medium to low risk, levered and partnered with other providers, regulators and industry. These would account for the majority of funds and be administered on an annual basis.

A category of funding entitled **"Collaborative Strategic Projects"** will exist within the Innovation Fund. These investments will be small, short-term, innovative projects, highly responsive to new ideas and changing needs, and aligned with AFRI's strategic directions.

To guide their investment decisions and assess the value of specific R&D proposals, a defined set of selection parameters will be used. Projects will be selected based on:

- Customer and market need;
- Innovation and creativity;
- R&D performance record of proponents;
- Assessment of the benefits to Albertans;
- Risk management plan;
- Leverage;
- Technology transfer and commercialization plan.

A detailed description of the selection parameters can be found in Appendix 2.

4. Anticipated Benefits

Research itself will not create meaningful benefits. It is the outcome of successful research and development that will benefit AFRI's three groups of customers: private industry, the provincial and local governments, and the people of Alberta.

Using a triple bottom line model[13], it is possible to categorize these benefits as economic, environmental or social. These benefits can be further described as quantitative (i.e. tangible, easily measured benefits), or qualitative in nature.

Appendix 3 contains a detailed matrix describing the benefits in the manner outlined above. The key benefits for each customer group are summarized below.

4.1. Benefits to Industry Participants

Forest products companies are expected to benefit primarily from an estimated $1.2 billion increase in value of shipments in 2010 resulting from:

- Increased access to markets limited by non-tariff barriers;
- Producing more value-added products from the fibre;
- Improved operating efficiency;
- Developing new bio-energy opportunities.

In addition, it is expected that the Supply and Service sector will be strengthened as a result of a stronger, globally competitive Alberta forest sector.

4.2. Benefits to the Provincial and Local Governments of Alberta

The governments of Alberta stand to benefit from investment in forestry research through:

- Sound scientific advice relating to emerging global forestry issues and mitigating policy options that will ensure continuing access to markets for our products; and
- Additional tax revenue[14] associated with increased shipments. By 2010, it is estimated that the incremental tax revenue associated with sector growth will be approximately $100 million annually. (See Appendix 4 for details.) A vibrant forest industry also means increased economic diversification and capital investment in the province.

4.3. Benefits to the People of Alberta

In addition to the economic benefits realized through additional tax revenues to the governments, Albertans can expect environmental and social benefits resulting from the outcomes of successful forest sector research and development. Key benefits include:

- Carbon sequestration;
- Improved air, water and soil quality;
- Enhanced management of forest lands;
- Job creation;
- Enhanced aboriginal and rural community stability;
- Enhanced aesthetic, recreational, tourism and spiritual value;
- Increased attraction and retention of world-class researchers.

[13] Environment Australia (2003). *Triple Bottom Line Reporting in Australia, June 2003*. http://www.getf.org/file/toolmanager/CustomO16C45F42151.pdf

[14] Includes personal, corporate, and income tax.

5. Performance Measurement

5.1. Performance Measures and Targets

To ultimately assess R&D performance, it is necessary to measure the final ***outcomes*** of the R&D; these outcomes are the economic, environmental and social benefits realized through the successful application of the R&D ***outputs***. While AFRI has control over the output from the R&D it supports, the outcomes are largely beyond its control, as they are dependent on industry's capacity to apply the research output. To emphasize its focus on end results, AFRI's Board has established performance measures and targets that are based on outcomes, not outputs.

The key measures that AFRI will use to report on its progress are summarized in Table 2. They are based largely on the "quantitative" benefits described in Appendix 3. In the upcoming months, AFRI will finalize the specific targets and systems to enable progress reporting on these measures.

Table 2: AFRI Performance Measures and Targets

	Performance Measure	Shorter-Term Target	Longer-Term Target
Economic Benefits	Increased value of shipments from Alberta's Forest Products (total $)	6.0 B$ by 2010	9.6 B$ by 2020
	Increased volume of fibre entering value chain (m3)	10% more fibre entering value chain by 2010	20% more fibre entering value chain by 2020
	Increased value of Alberta's fibre ($/m3)	10% increase in value of fibre by 2010	65% increase in value of fibre by 2020
	Increased level of investment by industry into Forest sector R&D	$5 million annual increase by industry in three years	Industry investment of 0.5% of shipment value
Environmental Benefits	Strengthened sustainable forest management practices	Alberta's forest products not excluded from any markets due to certification issues	Recognized as world leader in area of sustainable forest management
	Enhanced environmental services (e.g. clean air, water, carbon sequestration)	Bio-energy contribution of $200 million by 2010	Bio-energy contribution of $0.5 billion by 2020
Social Benefits	Job creation	60 new jobs in R&D in Alberta within 5 years; 10,000 new jobs in the sector by 2010	30,000 new jobs created in the forest products and related service and support sector by 2020
	Enhanced aboriginal community stability	Increased capability for employment in sector	Further increased employment opportunities

6. Management and Organization

6.1. Structure

AFRI is a member of the family of research institutes established by ASRA, as depicted in Figure 3 that follows.

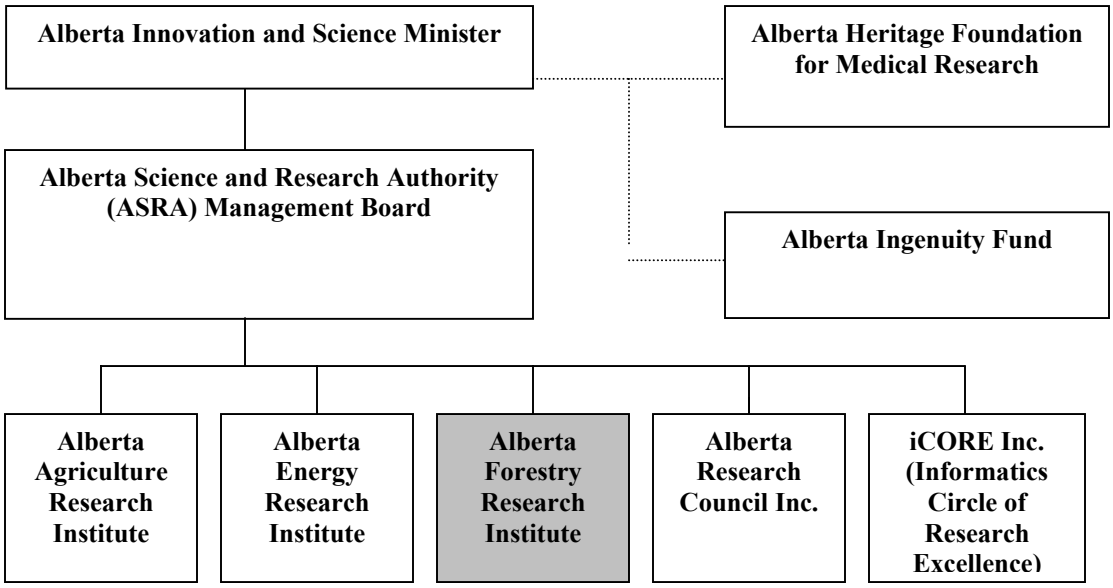


Figure 3. AFRI's Reporting Relationship to ASRA

6.2. The AFRI Board

It is the role of the Board of Directors to:

- Provide to ASRA and the Minister advice on questions of science, engineering and technology related to forestry and the emerging global forestry policy issues, and recommendations on applications for R&D grants they assigned to it;
- Prioritize, coordinate, support and promote research and technology development in the forest sector consistent with the strategic priorities established by ASRA;
- Set strategic direction for forestry and forest products research;
- Promote specific initiatives in forestry and forest products research deemed to be excellent and in support of the strategic direction;
- Secure from all sources the funding necessary to support its research initiatives and the operations of AFRI;
- Monitor, evaluate, and report on performance of its research investments;
- Communicate progress and performance to ASRA.

6.3. The AFRI Managing Director

It is the role of the Managing Director to:

- Implement the decisions of the AFRI Board of Directors;
- Identify potential R&D opportunities for AFRI, assist with their prioritization and secure their implementation;
- Promote AFRI's strategic priorities and programs to all stakeholders in Alberta's forest sector;
- Manage AFRI's investment portfolio;

- Manage assigned human and financial resources;
- Manage AFRI's intellectual property rights;
- Provide information to the AFRI Board of Directors, to Innovation and Science, to ASRA and to the Minister on strategic and technical issues related to the program and management of AFRI.

7. R&D Investment Plan

7.1. Strategic Program Areas

Table 3 describes the program areas for R&D investment by AFRI, and shows their relationship to the three strategic research directions.

Table 3: R&D Program Areas

Strategic Direction	Existing Programs	New Programs
Sustainable Forest Management	▪ Sustainable Forest Management Network (SFMN) ▪ Foothills Model Forest ▪ Manning Diversified Forest Products Research Trust Fund (MDFPTF)	▪ Conservation of Biodiversity ▪ Yield and Productivity Enhancement
Enhancing and Diversifying the Value Chain	▪ Forintek ▪ FERIC	▪ Biofactory/ Waste Management ▪ Design and Processes
New Products and Processes		▪ Composite Natural Fibre Products Development Program ▪ Biofactory/ Waste Management

7.2. AFRI's R&D Investment Requirement

AFRI's investment plan requires increased funding in its three strategic directions over the planning period as shown in Figure 4.

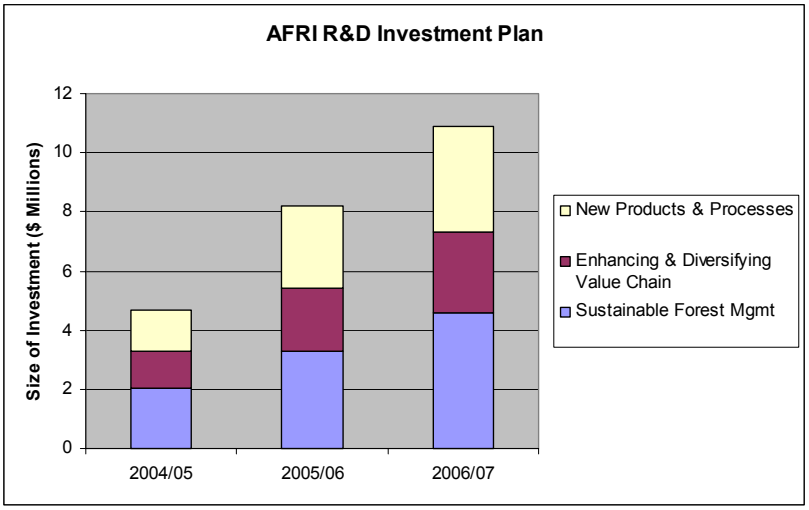


Figure 4: AFRI Investment Plan

7.3. AFRI's Strategic R&D Plan: 2004-05

While the details of the specific R&D activities to be pursued have not been finalized at the time of writing this business plan, the allocation of funds between the program areas for the 2004-05 fiscal year has been established and is shown in Table 4**. (**See Appendix 5 for the preliminary funding allocation for the extended three-year planning period.)

Table 4: Allocation of Funding: 2004-05

Strategic Direction	Existing Programs		New Programs	
	Programs	**Funding ($K)**	**Programs**	**Funding ($K)**
Sustainable Forest Management	▪ SFMN ▪ Foothills Model Forest ▪ MDFPTF	$1,000 $300 $300	▪ Conservation of Biodiversity ▪ Yield and Productivity Enhancement ▪ Collaborative Strategic Projects	$100 $200 $80
Enhancing and Diversifying the Value Chain	▪ Forintek ▪ FERIC	$200 $50	▪ Biofactory / Waste Management ▪ Design and Processes ▪ Collaborative Strategic Projects	$600 $400 $80
New Products and Processes			▪ Composite Natural Fibre Products Development Program ▪ Biofactory/ Waste Management ▪ Collaborative Strategic Projects	$1,000 $300 $80
		$1,850		$2,840

7.4. Operating Budget

AFRI's operating budget for the 2004-05 fiscal year is shown in Table 5.

Table 5. AFRI Operating Budget 2004-05

Budget Item	2004-05 ($K)
Salaries and benefits	$240
Office Administrative Supplies	10
Consultation Expenses	30
Travel and Meeting Expenses	30
Total	**$310**

7.5. Total Program Budget

Table 6 below summarizes AFRI's total program budget.

Table 6. Program Budget (in $1000s)

Budget Item	2004-05	2005-06	2006-07
Research Investment			
Sustainable Forest Management	$2,030	$3,300	$4,600
Enhancing and Diversifying the Value Chain	$1,280	$2,100	$2,700
New Products and Processes	$1,380	$2,800	$3,600
Total Research Investment	**$4,690**	**$8,200**	**$10,900**
Administrative Expenses			
Salaries	$240	$240	$240
Office/ Administrative Supplies	$10	$30	$30
Consultation Expenses	$30	$50	$50
Travel Expenses	$30	$30	$30
Total Administrative Expenses	**$310**	**$350**	**$350**
Total Program Expenses	**$5,000**	**$8,550**	**$11,250**

8. Key Risks

The following risks must be considered in the implementation of the AFRI Business Plan. The mitigating strategies will be implemented to eliminate or minimize these risks.

Table 7. Key Risks & Mitigating Strategies

Risk	Mitigating Strategies
Research generated is not applied by users.	▪ The creation of a balanced research portfolio, aligned with AFRI's values, and using its selection parameters; ▪ Incorporate active technology transfer components into each program.
Insufficient research investment is leveraged from industry.	▪ AFRI Board, which includes industry representatives, will participate in further consultation and communication activities to promote the benefits of AFRI's programs and projects.
Cost of meaningful research is unaffordable.	▪ Focus investment funds on limited number of programs; ▪ Collaborate and lever investments with industry, the federal government and other provincial entities, including AARI and AERI.
Capacity and capability to conduct the research is not available.	▪ Invest in recruitment and retention of necessary researchers and infrastructure.

Appendix 1: AFRI's Alignment with ASRA's Life Sciences Strategy

AFRI's programs will play a critical role in making ASRA's Life Sciences strategy a reality. Table 1 maps the alignment between ASRA's Goals and AFRI's Strategic Research Program Areas.

Table 1. Linkages between ASRA's Life Sciences Strategy and AFRI's Strategic Programs

AFRI's Strategic Direction	Life Sciences Opportunity Areas/ Strengths	AFRI's Strategic Program
1. Sustainable Forest Management	Environment, sustainable production/ forestry & environment/ genetics/ bio-informatics	▪ SFMN ▪ Foothills Model Forest ▪ MDFPTF ▪ Conservation of Biodiversity ▪ Yield and Productivity Enhancement
2. Enhancing and Diversifying the Value Chain	Bio-energy, bio-products/ forest products & environment	▪ Forintek ▪ FERIC ▪ Biofactory/ Waste Management ▪ Design and Processes
3. New Products and Processes	Biomaterials, bio-products/ nanotechnology	▪ Composite Natural Fibre Products ▪ Biofactory/ Waste Management

There are also direct linkages and synergies between the goals identified in the Life Sciences Strategy, and AFRI's Strategic Research Program areas, as shown in Table 2 on the following page.

Table 2: AFRI - ASRA Alignment

ASRA's Goals / AFRI Strategic Direction	Establish Alberta's leadership in strategic areas of research, development, and industry innovation.	Build life sciences research capacity and excellence.	Ensure a progressive and innovative business climate to foster and sustain industry innovation and growth in the life sciences.	Harmonize development of the life sciences with Albertan values and goals.	Develop, attract, and retain high quality people in the life sciences.
Forintek Canada Corporation and FERIC	X	X	X	X	X
Manning Diversified Forest Products Research Trust	X	X	X	X	X
Conservation of Biodiversity	X	X		X	X
Yield and Productivity	X	X	X	X	X
Composite Natural Fibre Products Development Program	X	X	X	X	X
Biofactory/ Waste Management	X	X		X	X
Design and Processes	X	X	X	X	X

Appendix 2: AFRI Research Project Selection Parameters

To assess the value of an R&D proposal it is necessary to have well understood and accepted evaluation parameters. The following parameters will be utilized for evaluating and selecting R&D proposals.

Table 1: Research Project Selection Parameters

Parameter	Description
Customer and market need	▪ The proposed investment will meet a clearly identified customer or market need. ▪ The importance of the customer to the Alberta sector, the size of the global market, and the competitiveness of its existing suppliers will be considered.
Innovation and Creativity	▪ The proposal will have scientific merit. ▪ All investments will deliver new intellectual property, which may be validated through peer review and publication or patenting.
R&D Performance Record of Proponents	▪ This is assessed through a due diligence process concerning previous project on-time, on-budget delivery to the required quality. Demonstrated success with projects of comparable size and complexity is expected.
Assessment of Benefits to Alberta	▪ Any or all of the following may be assessed in detailed proposals: potential ROI, R&D capability building, timing and rate of returns, and distribution of benefits.
Risk Management Plan	▪ The credibility of measures proposed to manage the risks of not delivering a quality project on time and within the budget.
Leverage	▪ Evidence of the creative use of resources external to AFRI to help accomplish the proposed project goals will be considered. ▪ This is an important signal of the quality and relevance of the project. ▪ Both cash donations to the project and in kind investments should be considered in leverage calculations and weighted separately in the project evaluation.
Technology Transfer and Commercialization Plan	▪ The credibility of the strategy to move the new knowledge into application and to manage the intellectual property will be considered.

Appendix 3: Anticipated Benefits from Investment in Forestry R&D

The following table describes the benefits are anticipated from an investment in forestry research and development.

Table 1: Anticipated Benefits from Investment in Forestry R&D

	Quantitative	Qualitative
Economic (for Forest Products companies)	▪ Growth in value of shipments of the forest products sector ▪ Increase in value of fibres ▪ Increase in volume of fibre entering value chain ▪ Bio-energy contribution ▪ Operating efficiency improvements	▪ A stronger, globally competitive Alta forestry industry ▪ Increased access to markets limited by non-tariff barriers i.e. certification ▪ Access to larger pool of highly trained individuals
Economic (for local and provincial governments)	▪ Funding leveragability ▪ Infrastructure support for joint projects (roads, bridges, etc.) ▪ Tax revenue[15] from increased growth in Forest Products, and Supply & Services sectors	▪ Economic diversification ▪ Additional capital investment by industry
Environmental (for all Albertans)	▪ Carbon sequestration ▪ Decrease in air and water pollution ▪ Increased capacity for power co-generation	▪ Enhanced management of forested lands ▪ Biodiversity maintained and enhanced ▪ Enhanced watershed management
Social (for all Albertans)	▪ Job creation	▪ Enhanced rural and aboriginal community stability ▪ Enhanced aesthetic, recreational, tourism and spiritual value ▪ Better trained workforce ▪ Increased critical mass of world-class researchers and professionals ▪ Increased enrolment in post-secondary forestry training programs

[15] Includes personal, income and corporate tax.

Appendix 4: Estimate of Additional Tax Revenue from Growth in Forest Sector

The following summarizes the calculation for increased tax revenue resulting from a growth in Alberta's forest sector.

Forestry Contributions To Alberta's Economy – Current Situation[16]:

Forestry Revenue:	
Total Direct Revenue:	$ 4,900 million
Total Indirect Revenue:	$ 3,500 million
Total Revenue:	***$ 8,400 million***
Taxes:	
Provincial Corporate Income Tax:	$188.4 million
Provincial Personal Income Tax:	$ 197.0 million
Property Tax:	$ 114.2 million
Total Tax:	***$ 499.6 million***
Estimated Current Total Tax / Revenue Ratios:	
Total Tax / Total Revenue:	***499.6 / 8,400. = 6.0%***

Assumed Growth in Forest Product Value of Shipments by 2010:

Year	2003	2004	2005	2006	2007	2008	2009	2010
Year on Year Growth Rate	0	0	2%	3%	3.5%	4%	5%	5.5%
Forest Products Value of Shipments (K$)	**4800**	4800	4896	5043	5219	5428	5700	**6013**

Over the period 2003 to 2010, growth in Value of Shipments equals $1,213 million, which equates to a 25.3% increase.

It is conservatively assumed that over the same time period, the indirect sector grows by only 10%, or $ 350 million.

Increased Annual Tax Revenue by 2010, Through Forest Sector Growth:

Increase in Forest Products Value of Shipments and Revenue from Indirect Sector by 2010:

- $1,213 + $350 = $1,563 million

Estimated additional tax revenue by 2010:

- **$1,563 x 6.0% = $ 94 million ~ $100 million**

[16] Figures taken from:
Alberta Forest Products Association. 2001. *Alberta Forest Products Industries: Overview & Economic Impact.* http:/www3.gov.ab.ca/srd/forests/managing/business/pubs/AlbertaForestProductsIndustries.pdf

Appendix 5: Preliminary Funding Allocation to Program Areas 2004-07

The following table describes the preliminary funding allocations to AFRI's program areas for the next three years.

Table 1. Preliminary Funding Allocations to Program Areas, 2004- 07

		2004-05 ($K)			2005-06 ($K)			2006-07 ($K)		
		Existing	New	Total	Existing	New	Total	Existing	New	Total
Sustainable Forest Management	SFM network	1000		1000	1000		1000	1300		1300
	MDFP	300		300	300		300	300		300
	FMF	300		300	300		300	300		300
	Yield and Productivity		200	200		600	600		1000	1000
	Biodiversity		100	100		500	500		800	800
	Strategic Projects		80	80		100	100		100	100
	Design and Processes					200	200		400	400
	TOTAL	**1600**	**380**	**1980**	**1600**	**1400**	**3000**	**1900**	**2300**	**4200**
		Existing	New	Total	Existing	New	Total	Existing	New	Total
Enhancing and Diversifying the Value Chain	FERIC	50		50	300		300	400		400
	Forintek	200		200	300		300	400		400
	Biofactory/ Waste Management		600	600		1200	1200		1500	1500
	Design and Processes		400	400		500	500		700	700
	Strategic Projects		80	80		100	100		100	100
	TOTAL	**250**	**680**	**1330**	**600**	**1800**	**2400**	**800**	**2300**	**3100**
		Existing	New	Total	Existing	New	Total	Existing	New	Total
New Products and Processes	Composite Natural Fibre Products Development Program		1000	1000		1500	1500		1800	1800
	Strategic Projects		80	80		100	100		100	100
	Biofactory/ Waste Management		300	300		1200	1200		1700	1700
	TOTAL	**0**	**1380**	**1380**	**0**	**2800**	**2800**	**0**	**3600**	**3600**
TOTAL RESEARCH INVESTMENT		**1850**	**2840**	**4690**	**2200**	**6000**	**8200**	**2700**	**8200**	**10900**

Low